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CHAPTER 6

An Assessment of the Business Environment for Waste-to-energy Enterprises and How it Affects Women Entrepreneurs in Kenya

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6.1 Introduction

Assessing the gender dimension of an investment climate is important when considering strategies to improve the business environment and promote private sector development in the resource, recovery and reuse (RRR) sector. The term *investment climate* is used synonymously with 'business environment' and can be broadly thought of as an environment where businesses operate and where governance and institutions support entrepreneurship and well-functioning markets in order to help generate growth and development (Hallward-Driemeier et al. 2006). In developing countries, women are more likely to work in informal sectors where they are subject to inefficiencies and limitations (Simavi et al. 2010). Women often find it more difficult than men to formalize their businesses due to low levels of education and business skills as well as sociocultural factors which may restrict the female domain to low-level economic activity and the domestic environment (Simavi et al. 2010). Waste-to-energy (WTE) entrepreneurs are faced with the challenges of accessing space, water, financial support and poor perceptions of their product by potential customers (Njenga et al. 2013). Furthermore, women face unique limitations in accessing resources in the informal competitive environment that inhibit their potential to develop their enterprises. Some constraints may affect men and women's businesses differently and surveys need to be designed to capture these differences. In this study we assess the investment climate for WTE enterprises from a gender perspective.

The investment climate criteria relevant for the WTE sector include *policy and infrastructure, finance, business support* and *markets*. A number of indicators across each of the criteria were identified. Although not all investment climate indicators are specifically designed to capture differences in legal and regulatory treatments between men and women, they measure aspects of the business environment that matter for all entrepreneurs engaged in WTE businesses, regardless of gender. The investment climate indicators measure the business environment for WTE businesses in the context of access to resources such as land, access to finance and access to infrastructural services such as electricity, water and transportation which are relevant to the productivity and growth of the enterprises.

6.2 Methodology

In 2016, a company-level survey of 32 formal WTE businesses engaged in the production and sale of recovered energy products such as biogas and briquettes was conducted in Kenya. A structured survey questionnaire was used to interview all the respondents. During the interview, representatives of the enterprises, mainly those who were decision-makers or founders of the business, were asked to identify the major constraints to their business activity. In addition to company owners' perceptions of the various investment climate indicators, owners of the WTE enterprises were asked to provide objective data related to the different indicators. This study presents findings from the survey conducted in Kenya focusing on *policy and infrastructure* and *finance* aspects of the investment climate. The study also provides lessons learned on constraints faced by men and women in WTE enterprise development.

6.3 Results and Discussion

6.3.1 General characteristics of WTE enterprise owners

Women are involved as owners, workers and managers in the WTE sector. In our survey, 42% of the 32 WTE enterprises were owned by women. The types of enterprises in our sample included briquette and biogas enterprises. Table 6.1 presents the characteristics of the owners by the type of enterprise they owned. More than two-thirds of the briquette enterprises in our survey were owned by women while only 13% of the biogas plants in our sample were owned likewise. This indicated that women generally preferred to engage in briquette production and sales. Entrepreneurs operating in the reuse sector did not differ much in their personal traits such as age and years of experience in reuse activities. The average age of the owners of the sampled briquette enterprises was 41 years with eight years of experience in WTE activities while the average age of the owners of the biogas plants was 44 years with five years of experience in reuse activities. These enterprises predominantly hired seasonal workers and women's share of the labor force was on average 55% for the briquette enterprises and 18% for the biogas plants indicating that the briquette enterprises hired more female labor than the biogas plants.

Although the education level was low in the WTE sector, as most of the owners had not progressed beyond the high school education level, owners of biogas plants had a higher education level than the owners of briquette enterprises. None of the owners of the briquette enterprises had higher education levels beyond a high school, while more than one-third of the owners of biogas plants had achieved either vocational or graduate degree level. The briquette sector is preferred by female entrepreneurs with low level of education. The low level of formal education was one of the factors limiting the development of women as entrepreneurs and contributed to their lack of access to resources as described in subsequent sections. For instance, the low level of education limited the capacity of women to develop bankable business models and thus hindered the participation of women in accessing finance such as bank loans.

TABLE 6.1. GENERAL CHARACTERISTICS OF WTE ENTERPRISES.

	WTE enterprise type	
	Briquette	Biogas
Gender of owner (%) (1=female, 0= male)	64	13
Age of owner	41	44
Percentage of female workers (%)	55	18
Education level of founders (%):		
Up to primary	27	26
High school	72	29
Vocational	0	22
Graduate degree	0	23

6.3.2 WTE enterprises' perceptions of policy and infrastructure factors

Representatives of WTE enterprises were asked to identify the major constraints to their business activities and rate a set of potential bottlenecks related to policy and infrastructure factors. Policy and infrastructure were among the key factors that affected investment in WTE enterprises. In order to assess the policy and infrastructure environment within which WTE enterprises operated, a number of indicators were used. These indicators included entry and exit factors (such a the time it takes to get registration, licensing, certification, renewal and closure) and the costs related to entry and exit. Furthermore, other factors related to regulations (such as customs and tax) and infrastructural services including electricity, water, transport, construction permits and product certification were used as indicators to assess the policy and infrastructure environment.

Figure 6.1 provides a summary of the differences in identified constraints by gender of the owners, showing the percentage of male and female entrepreneurs perceiving each investment climate indicator as a major or severe constraint to company growth. The survey results showed that such perceptions varied across male- and female-owned enterprises. A larger share of female-owned enterprises perceived access to land, water and business licensing and permits to be a major or severe constraint. The male-owned enterprises also identified these factors as major constraints, however the share of male-owned enterprises was lower. For example, while access to land (100%) and business licensing (88%) was considered as a severe constraint by the female-owned WTE enterprises, 64% of male-owned enterprises considered the same as a

severe constraint. About three-quarters of female-owned enterprises reported tax administration and tax rates as severe constraints but these percentages were only 36% for tax rates and 45% for tax administration among male-owned enterprises. Both male- and female-owned enterprises complained about environmental regulations and product certification, however the share of male-owned enterprises in this context was higher than that of the female-owned enterprises. Lack of an educated workforce was perceived as a major constraint by a quarter of female-owned enterprises but none of the male-owned enterprises considered it to be a major constraint.

In our survey, female owners of enterprises judged most constraints as more severe than their male counterparts, and the gender gap for several constraints was large. The biggest differences were for business licenses, access to land, tax administration, tax rates and the availability of an educated workforce where there was 25 or more percentage points' difference. There were also constraints deemed as more severe by male rather than female entrepreneurs such as environmental regulations, product certification, transport and customs and trade where there was a 10 or more percentage points' difference among male and female owners.

Figure 6.2 shows the top five constraints by gender of the entrepreneur, illustrating reform priorities of the WTE sector. The bars show the percentage of male and female entrepreneurs who believed that the constraint was major or very severe. Access to land and water stood out as the two most severe constraints for both genders. Access to land was a constraint on enterprise expansion, especially in urban and peri-urban areas where most of the businesses were located. Business licensing, tax rate and tax administration were more important constraints for women while transport and environmental regulations were identified as major constraints by men.

FIGURE 6.1. PERCENT OF WTE ENTERPRISES REPORTING POLICY AND INFRASTRUCTURE FACTORS AS MAJOR OR SEVERE CONSTRAINTS BY GENDER.

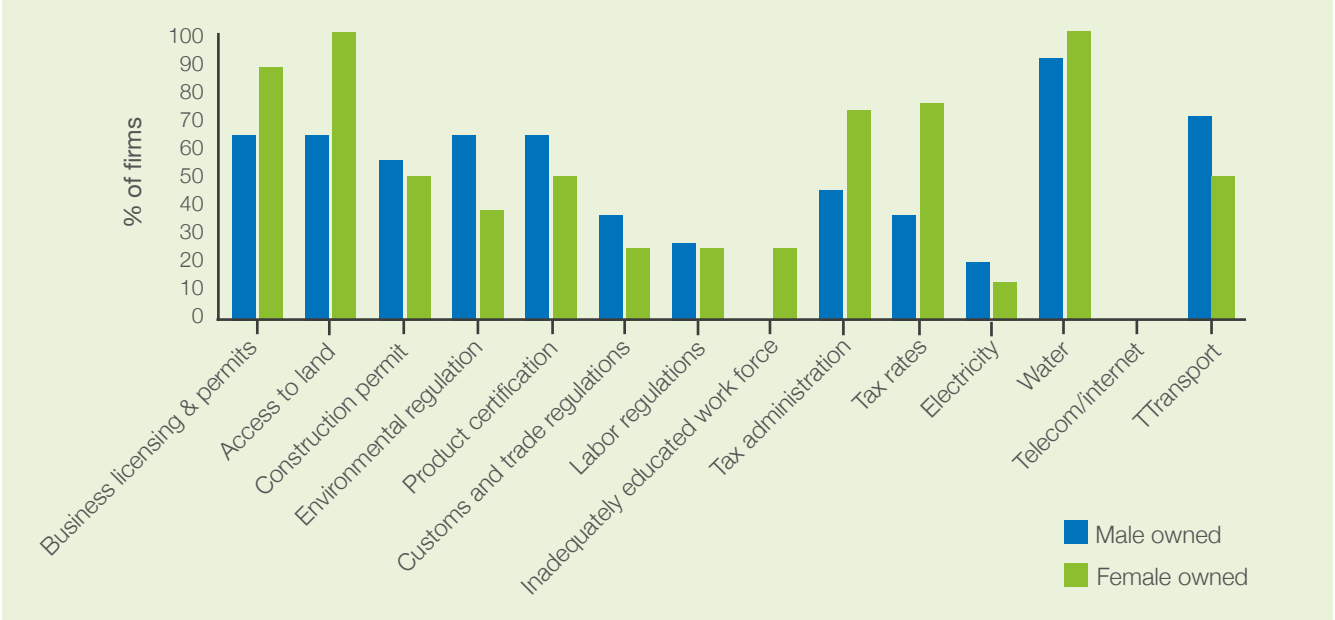
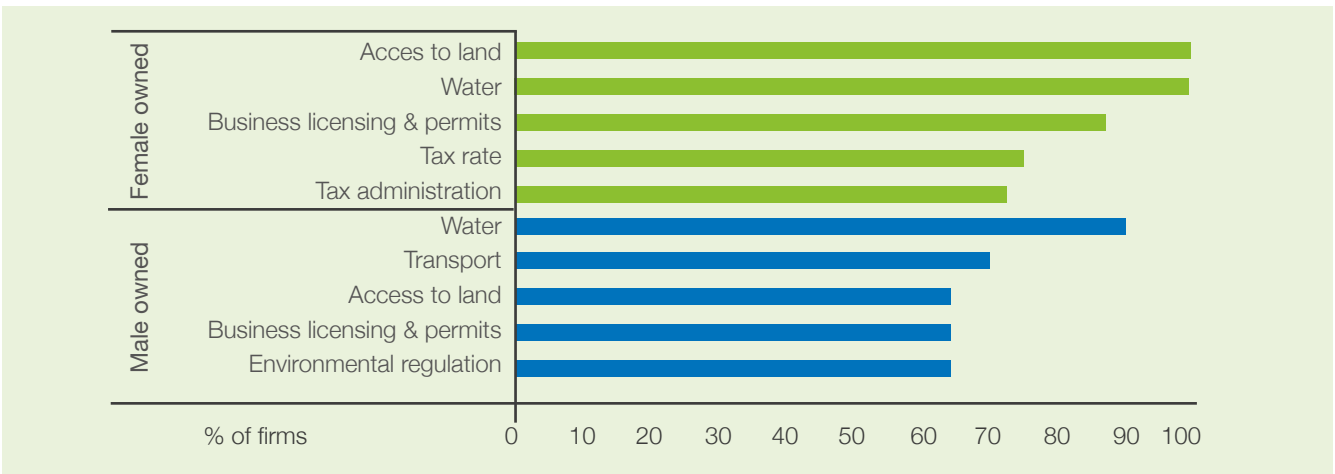


FIGURE 6.2. TOP RANKED CONSTRAINTS BY GENDER OF OWNER.



Business licensing and registration procedures are among the important indicators used to measure the challenges faced in establishing and running businesses (World Bank 2004). From the perceptions' study, business licensing and permits were rated as one of the top five constraints by both men and women (Figures 6.1 and 6.2). To get a better understanding of how this factor affected male and female entrepreneurs, data were collected on cost and time spent in obtaining and renewing business licenses and permits. This included time spent in the process such as staff time used in dealing with processing and renewal of the licenses and permits.

Starting a WTE business in Kenya is a lengthy process. The average number of days required to start a new WTE business is 45 days. Both men and women faced on average the same number of procedures to obtain a business license (Table 6.2). However, it cost on average 20% less for women to obtain a license in terms of time and money compared to men. Moreover, women, on average, spent less management time on dealing with licenses and permits than their male counterparts. Women were less likely to meet and negotiate bribes with government officials. It is also possible that government officials were supportive of female entrepreneurs as Kenya's Ministry of Trade and Industry has established a gender unit which supports female entrepreneurs. The number of days required to renew a license was similar for both genders.

6.3.3 *Access to finance and its disproportionate effect on women and men*

Access to finance at the company level is important for productivity and growth (Afram and Del Pero 2012). The availability of external financing to bridge the gap between internally generated resources and the financing needs of companies is an essential part of a sound investment climate (Iarossi 2009; Iarossi et al. 2009). In this section we first examine enterprise owners' perceptions of the cost and availability of external finance followed by objective measures of the availability and cost of external financing.

TABLE 6.2. TIME AND MONEY SPENT BY MEN AND WOMEN ON BUSINESS LICENSES AND PERMITS.

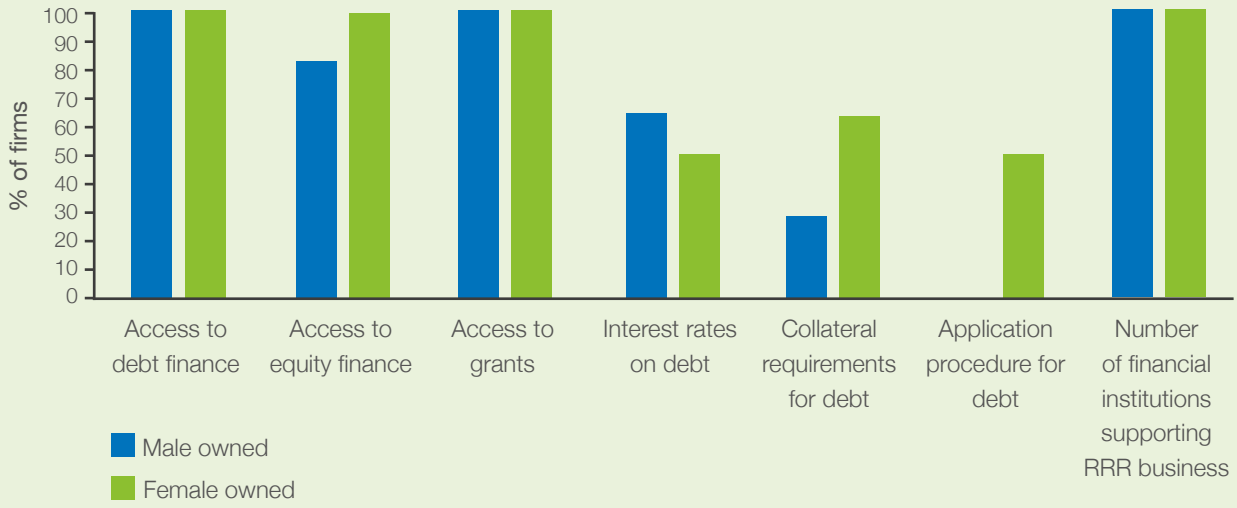
	WTE enterprises	
	Male-owned	Female-owned
Duration to obtain license (days)	47	38
Number of procedures to obtain license	13	13
Cost of license and permit (KES)	23,700	18,833
Management time spent dealing with license (%)	10	4
Number of days to renew license	11	10
Cost to renew license (KES)	5,750	5,083

WTE entrepreneurs tended to agree on the level of severity of many constraints related to access to finance (Figure 6.3). Access to different sources of finance (debt, equity and grants) and number of financial institutions supporting WTE businesses were rated as the most severe constraints by both male and female entrepreneurs. Collateral requirements on applications for loans were reported as severe constraints by more women than men. While both male- and female-owned enterprises identified collateral requirement as a major constraint, the share of female-owned enterprises rating this factor was higher. This could be associated with the patriarchal family system where most assets such as land and houses that are required as security in acquiring loans are owned and controlled by men. In addition, application procedures for loans were perceived as a major constraint by half of the female-owned enterprises but none of the male-owned enterprises concurred. This can be attributed to the fact that all of the women owning the WTE enterprises had only primary or high school education while more than one-third of the men had higher education. Low level of education and application procedures requiring document completion were an intimidating combination for women, who may have asked for assistance in filling out the documents, resulting in possible loss of confidentiality. Thus, women's low levels of education coupled with lack of landownership for collateral were major constraints in getting access to bank loans for them.

6.3.4 *Gender-differentiated sources of finance for initial investment and working capital*

Perceptions of WTE enterprise owners are informative indicators of problems in accessing finance, however, they do not provide sufficient and objective data to understand the underlying problems in accessing financing opportunities. Thus, in addition to eliciting perceptions about access to finance, owners were asked about how they financed initial investment and working capital. Both men and women relied largely on internal funds to finance the bulk of their initial investment (Table 6.3). On average male- and female-owned enterprises financed respectively 67% and 79% of their initial investment through the owners' contributions. Male-owned enterprises financed more than a quarter of their initial investment with funding from international donors and governments, however, this percentage was only 5% for female-owned enterprises. Borrowing from informal sources such as non-banking institutions and other sources including family and friends was noted among women. This could be associated with the low level of knowledge that may affect women's awareness or access to information on financial support opportunities. It is possible that women were interested in small-sized enterprises for ease of management

FIGURE 6.3. PERCENTAGE OF COMPANIES REPORTING FINANCE FACTORS AS MAJOR OR SEVERE OBSTACLES.



and ease in consolidating initial investment from friends and family members. This may require a low amount of initial investment compared to sourcing from donors and governments and illustrates women's participatory strength in reliable social networks for financial support whose repayment modes could be less stressful, less risky and more informal.

TABLE 6.3. SOURCE OF FINANCING FOR INITIAL INVESTMENT BY GENDER.

	Male-owned	Female-owned
Owners' contributions	67	79
Borrowed from bank	0	0
Borrowed from non-banking institutions	0	4
Funding from international donors	28	5
Government grants	5	0
Other	0	12

There was little difference between male- and female-owned enterprises in the sources of finance for working capital (Table 6.4). Both relied on retained earnings to finance the bulk of their working capital needs. However, women were more likely than men to rely on other informal sources of finance for working capital needs. This indicated that women were able to inject additional funds for working capital needs in addition to retained earnings. Having ample working capital not only helps to meet business obligations, it is vital for business growth.

WTE enterprises financed 70 to 85% of new investments and more than 85% of their working capital needs with the owners' contributions or retained earnings. This was considerably higher than in other sectors such as the manufacturing sector in Kenya where manufacturing firms finance on average 51% of working capital and 59% of new investments with retained earnings (Iarossi 2009). The formal sources of financial support for business such as banks and donor support were less utilized by entrepreneurs involved in WTE businesses in Kenya. This could be associated with the informal nature of the WTE enterprises as well as the low level of education of the owners of the WTE enterprises, especially the female business owners.

TABLE 6.4. Source of financing for working capital by gender.

	Male-owned	Female-owned
Retained earnings	100	86
Borrowed from banks	0	0
Borrowed from non-banking institutions	0	0
International donors	0	0
Government grants	0	0
Other	0	14

6.3.5 Loan application procedures and impacts on women's WTE enterprises

Measuring loan application and rejection rates provided important information about barriers to accessing finance. WTE enterprises made little use of loans from banks to finance their investments or their day-to-day working capital needs and instead they usually resorted to internal funds. The proportion of WTE enterprises applying for a loan was low. Only 8% of male-owned and none of the female-

owned enterprises had applied for a loan in the previous year (2015). In order to understand why the enterprises did not apply for loans, we present the reasons reported by the owners of the enterprises that did not apply for a loan in Table 6.5. About half of the female-owned enterprises and a third of the male-owned enterprises indicated that they had no need for a bank loan demonstrating that these enterprises were not investing beyond what their internal sources allowed, showing a lack of growth in the sector. Furthermore, a higher proportion (87%) of the female-owned enterprises indicated that they did not believe the loan would have been approved as the reason for non-application. This illustrates a lack of trust among women on how much the loaning bodies believed in their ability to run businesses that generate enough income to pay back the loans. Given that fixed assets are used as collateral in most developing countries, it is not surprising that the collateral requirement was also an obstacle to accessing finance for both male- and female-owned enterprises. A high interest rate was cited by about 10% of the male-owned enterprises as the reason for non-application while none of the female-owned enterprises cited interest rates as a reason for non-application.

TABLE 6.5. Reasons for not applying for a loan offered by male and female entrepreneurs

	Male-owned (%)	Female-owned (%)
Applied for a loan	8	0
Reason for not applying:		
No need for a loan	30	50
Complex application procedure	0	0
High interest rate	10	0
High collateral requirement	10	13
Did not think it would be approved	50	87

6.4 Lessons for Action on the Investment Climate for Women's Empowerment

Assessing the gender dimension of the investment climate is important when considering strategies to improve the business environment and promote women's engagement and productivity in the WTE sector. The rate and nature of women's participation and growth in the WTE sector are affected by many factors including regulatory and legal conditions, physical infrastructure, access to resources, availability of capital and human resources. This study assessed gender-differentiated impacts of factors that influenced the establishment and running of WTE enterprises and concluded and recommended that:

- The educational level of the owners of WTE enterprises was lower for women than men. Furthermore female-owned enterprises rated *access to land, water, business licensing and permits* and *access to finances* as major constraints to the establishment and growth of their enterprises;
- WTE enterprises made little use of loans from banks to finance their investments or their day-to-day working capital needs. Both female and male entrepreneurs relied predominantly on their own internal funds and retained earnings to finance initial investments and working capital needs which might limit growth in their businesses;
- The low level of education among women had various adverse implications on the growth of their enterprises. Female entrepreneurs in the WTE sector were intimidated by the application procedures for requesting loans or grants from financial institutions or donors. Furthermore, female entrepreneurs doubted if the institutions processing loans would give their applications favorable consideration and as a result they ended up not submitting applications. Owners of the WTE enterprises were more risk averse and preferred to borrow money from informal sources such as friends and relatives, which, although providing benefits in terms of low risks, provided women with limited funds for investment; hence their businesses could stagnate as informal and small-scale;
- Another limitation to borrowing loans could be associated with the patriarchal family model where the male has more ownership of land and other assets which are important security in borrowing funds. It is likely that banks doubt if women with low education and limited resources will be able to run businesses that will generate enough money to repay the loans;
- Access to different forms of finances are key reform priorities that need to be put in place to address the gender disparities in accessing resources for businesses. Such interventions may involve regulations and opportunities that reduce the need for high literacy levels, hence making the conditions favorable for less educated women. One good example could be the use of mobile phone lending systems such as Mpesa which is highly successful in the country. In this way women can borrow money using the phones and make repayments in small instalments which increases their confidence in borrowing without the fear that they will be turned down or lose property if they fail to repay. This system of borrowing also keeps the confidentiality that women entrepreneurs may wish to preserve with respect to their financial situations. Further, microfinance institutions and financial cooperatives

that integrate business development training could be used as alternatives to commercial banks to finance WTE businesses; and

- Access to water and land for female enterprises was another limiting factor to growth of the businesses. This could be enhanced by reserving space for women, especially where processes are characterized by irregularities such as corruption. Moreover, gender disaggregation of land records to establish the baseline is important in implementation of policies and regulatory practices to help improve women's access to land.

6.5 References

Afram, G.G.; Del Pero, A.S. 2012. *Nepal's investment climate leveraging the private sector for job creation and growth.* Washington DC, USA: The World Bank.

Hallward-Driemeier, M.; Wallsten, S.; Xu, L.C. 2006. Ownership, investment climate and firm performance: Evidence from Chinese firms. *Economics of Transition* 14: 629–647.

Iarossi, G. 2009. *An assessment of the investment climate in Kenya.* Washington DC, USA: The World Bank.

Iarossi, G.; Mousley, P.; Radwan, I. 2009. *An assessment of the investment climate in Nigeria.* Washington DC, USA: The World Bank.

Njenga, M.; Yonemitsu, A.; Karanja, N.; Iiyama, M.; Kithinji, J.; Dubbeling, M.; Sundberg, C.; Jamnadass, R. 2013. Implications of charcoal briquette produced by local communities on livelihoods and environment in Nairobi, Kenya. *International Journal of Renewable Energy Development* 2(1): 19–29.

Simavi, S.; Mauel, C.; Blackden, M. 2010. *Gender dimensions of investment climate reform - a guide for policy makers and practitioners.* Washington DC, USA: The World Bank.

World Bank. 2004. *World development report 2005: A better investment climate for everyone.* Washington, DC, USA: World Bank. 292p.

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